October 3, 2016
Kirsten Walli
Board Secretary
Ontario Energy Board
P.O. Box 2319
2300 Yonge Street, 27th Floor
Toronto ON M4P 1E4

Dear Ms. Walli:

Re: Ontario Power Generation Inc. 2017-2021 Payment Amounts, EB-2016-0152

Below you will find a letter from Oxford Global Projects Ltd regarding their proposed evidence in Ontario Power Generation's 2017-2021 rates application. Energy Probe believes Oxford's letter clearly highlights both the importance and supplemental value that their evidence would provide to this hearing. It also details their history of providing evidence at regulatory proceedings and, in particular, those concerning nuclear projects.

We should highlight that unlike the Board Staff evidence proposal, which provided a few, brief notes on the nature of their evidence, Energy Probe's proposal provided a detailed look the methodology of the evidence and the group behind it. Furthermore, of the five points of detail from Board Staff on their proposed evidence, only one of those points[1] would have any overlap with Energy Probe's submission.

Energy Probe's evidence would also cost one-sixth of Board Staff's and would bring world class experts – the first time they have appeared before the OEB – to the proceeding. Oxford Global Projects Ltd has also never worked for a utility in Ontario.

Energy Probe is concerned that it appears the Board is establishing a precedent in which there is hierarchy of evidence submissions, where Board Staff is first in line. While Energy Probe recognizes and appreciates Board Staff's role as one that represents the "public interest", we question whether Board Staff should be given preferential treatment over other public interest groups when it comes to using ratepayer money to provide evidence.

[1] From Board Staff's September 14 letter: "reviews the DRP proposal with respect to previous OPG mega-projects, previous CANDU refurbishments, previous PWR refurbishments, and relevant mega-projects in other jurisdictions."

And finally, it should be noted that OPG has submitted evidence in their application that produces a number of areas of overlap. Considering the size and scope of this application – the largest ever before the Ontario Energy Board – allowing only Board Staff to receive ratepayer funding on the premise that they are best suited to protecting the interests of ratepayers imposes a limit on this hearing. Board Staff's interpretation and that of ratepayer groups may differ when it comes to "public interest."

Sincerely,

Original signed by

Brady Yauch
Case Manager and Consultant

The letter from Oxford Global Projects Ltd:

> *Thank you for your interest in an explanation of how our evidence would be distinguishable from that of the other experts, and in its incremental value to your proceedings. Our approach is indeed different to that of the other contributions and would complement their evidence.*
>
> *Conventional risk assessments, as suggested by the other evidence already presented and being proposed, is based on a bottom-up approach to forecast and evaluation risk. This type of evidence presents a detailed risk assessment of construction plans and rates and risk registers. It then establishes the overall risk for the program.*
>
> *Yet, academic research and evaluation has shown that conventional forecasting tools available to project planners have been found to be only suitable to forecast variations (e.g. construction cost of materials) up to approximately one year into the future (Bair et al. 1993).*
>
> *Even more importantly, using bottom-up forecasts, such as has been proposed in this proceeding, has been demonstrated to lead to optimistic assessments due to the so called inside view of the programme (Lovallo and Kahneman 2003, Flyvbjerg 2003). When taking an inside view, being optimistic about underlying assumptions adds up to large forecast inaccuracies for long and big programs, such as the Darlington Refurbishment Program. Exhibit D2 Schedule 7 and 8 and the reviews therein document that the program has taken this inside view of risk to estimate a 13% contingency at P90.*
>
> *The root cause of why forecasts are inaccurate is that expert judgement is biased (Kahneman et al. 2011). Thus we are proposing to replace the optimistic inside view of the program with a de-biased outside view*

(Flyvbjerg 2008). This is particularly crucial in risk forecasts that aim to provide a high level of certainty of the estimate, such as the P90 used in the Darlington Refurbishment cost estimate. In our experience, we find that the optimism bias in estimates above P66 is significantly higher than the bias in 'most likely' (P50) estimates.

The outside view approach has been shown to outperform these assessments and is required as the gold standard of risk forecasting in countries such as the UK, Denmark, Hong Kong and Australia.

The outside view of risk is established by using robust and reliable data to forecast risks to replace and/or challenge expert judgement.

In order to achieve this, data needs to be of the highest quality. Thus, we propose to:

(1) Use all available data in order to avoid selection bias in the risk appraisal;
(2) Use academically peer reviewed data in an effort to ensure high quality and robustness; and
(3) Offer the OEB a full range of potential outcomes for the DRP.

The benefits of this approach is that OEB:

- Is relying on the most robust and defensible evidence possible to set a realistic rate to recover costs for the DRP;
- Creates a de-biased, realistic view of risk of the project;
- Checks the bottom-up risk appraisal; effectively providing data driven quality assurance;
- Uses already available data, keeping the cost for the taxpayer minimal and providing good value-for-money;
- Ultimately, allow the OEB to accurately and defensibly evaluate the economic viability and affordability of the DRP.

In addition you have requested that we specify the area of expertise for which we wish to qualify and a summary of our previous experience in testifying as Reference Class Forecasting expert witnesses before regulatory tribunals, in particular with respect to our specific expertise with respect to nuclear power projects.

Our key expertise is in providing accurate, de-biased risk forecasts and our expertise has been used in a wide range of sectors with capital investment projects, such as transport infrastructure, energy and technology.

Specifically in nuclear power, we have provided a cost risk assessment for the Hinkley Point C project for the UK Department of Energy and Climate

Change and the Nuclear Industry Council. We have provided cost risk reviews for the Swedish Nuclear Decommissioning Program.

We have provided our expertise to regulators and oversight bodies for projects such as California High Speed Rail, the Oakland Bay Bridge, and the Fehmarn Belt Project in Denmark.

We have also contributed our expertise to investigations of the UK Competition and Markets Authority with regards to the Project Management industry, and to the UK National Audit Office and US Office of Government Accountability. We also helped to formulate and establish key policies with regards to project planning for risk in the UK, Denmark, Hong Kong, and in Australia for the governments of New South Wales and Victoria.

References:

- *Blair, Andrew N., Leonard M. Lye, and W. J. Campbell. "Forecasting construction cost escalation." Canadian Journal of Civil Engineering 20, no. 4 (1993): 602-612.*
- *Flyvbjerg, Bent. "Delusions of success: comment on Dan Lovallo and Daniel Kahneman." Harvard Business Review 81, no. 12 (2003): 121-122.*
- *Flyvbjerg, Bent. "Curbing optimism bias and strategic misrepresentation in planning: Reference class forecasting in practice." European planning studies 16, no. 1 (2008): 3-21.*
- *Lovallo, Dan, and Daniel Kahneman. "Delusions of success." Harvard business review 81, no. 7 (2003): 56-63.*
- *Kahneman, Daniel, Dan Lovallo, and Olivier Sibony. "Before you make that big decision." Harvard business review 89, no. 6 (2011): 50-60*